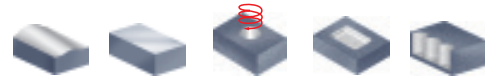
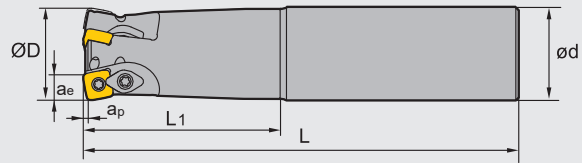


High feed milling cutters

XMR01**P M K S**

S-type insert, straight shank



Specification of tools

Type		Dimensions(inch)						
		ØD	ød	L ₁	L	a _p max	a _e max	Z (Number of teeth)
XMR01	-0.75"-G0.75"-SD06-02C	0.75	0.75	2.50	6	0.031	0.196	2
	-0.75"-G0.75"-SD06-02CL	0.75	0.75	4.00	7	0.031	0.196	2
	-0.75"-G0.75"-SD06-02CXL	0.75	0.75	5.00	10	0.031	0.196	2
	-1.00"-G1.00"-SD06-03C	1.00	1.00	3.50	7	0.031	0.196	3
	-1.00"-G1.00"-SD06-03CL	1.00	1.00	4.50	8	0.031	0.196	3
	-1.00"-G1.00"-SD06-03CXL	1.00	1.00	5.00	11	0.031	0.196	3
	-1.00"-G1.00"-SD09-02C	1.00	1.00	3.50	7	0.055	0.297	2
	-1.00"-G1.00"-SD09-02CL	1.00	1.00	4.50	8	0.055	0.297	2
	-1.00"-G1.00"-SD09-02CXL	1.00	1.00	7.00	12	0.055	0.297	2
	-1.25"-G1.25"-SD09-03C	1.25	1.25	3.50	8	0.055	0.297	3
	-1.25"-G1.25"-SD09-03CL	1.25	1.25	4.50	8	0.055	0.297	3
	-1.25"-G1.25"-SD09-03CXL	1.25	1.25	7.00	12	0.055	0.297	3
	-1.25"-G1.25"-SD12-02C	1.25	1.25	3.50	8	0.071	0.380	2
	-1.25"-G1.25"-SD12-02CL	1.25	1.25	4.50	8	0.071	0.380	2
	-1.25"-G1.25"-SD12-02CXL	1.25	1.25	7.00	12	0.071	0.380	2
	-1.50"-G1.50"-SD12-03C	1.50	1.50	3.50	8	0.071	0.380	3
	-1.50"-G1.50"-SD12-03CL	1.50	1.50	5.00	11	0.071	0.380	3
	-1.50"-G1.50"-SD12-03CXL	1.50	1.50	7.00	12	0.071	0.380	3
	-1.50"-G1.50"-SD15-02C	1.50	1.50	4.50	8	0.087	0.508	2
	-1.50"-G1.50"-SD15-02CL	1.50	1.50	5.00	11	0.087	0.508	2
	-1.50"-G1.50"-SD15-02CXL	1.50	1.50	7.00	12	0.087	0.508	2
	-1.75"-G1.50"-SD15-02C	1.75	1.50	4.50	10	0.087	0.508	2

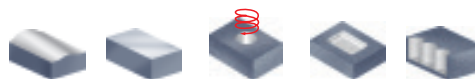
XMR01-0.75"-G0.75"-SD06-02CL/XL

Number of teeth Extra long series
Coolant through Long series

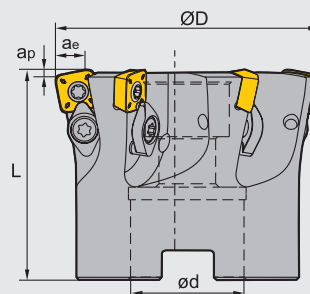
Spare parts

Tool type	Insert screw	Wedge screw	Clamp	Insert wrench	Wedge wrench	Sketch of installation
XMR01□□-SD06□□	I60M2.2×5.5	--	--	WT07IP	---	
XMR01□□-SD09□□	I60M3.5×08TT	I60M4×8.4	WD-204	WT10IP	WT15IP	
XMR01□□-SD12□□	I60M4×8.4	I60M4×8.4	WD-204	WT15IP	WT15IP	
XMR01□□-SD15□□	I60M5×13	I60M5×13	WD-208	WT20IP	WT20IP	

High feed milling cutters


XMR01


S-type insert, arbor mounting



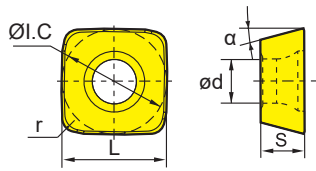
Specification of tools

Type		Dimensions(inch)					
		ØD	ød	L	apmax	ae max	Z (Number of teeth)
XMR01	-2.00"-A0.75"-SD06-07C	2.00	0.75	1.75	0.031	0.196	7
	-2.50"-A0.75"-SD06-10C	2.50	0.75	1.75	0.031	0.196	10
	-2.50"-A1.00"-SD06-10C	2.50	1.00	2.00	0.031	0.196	10
	-2.00"-A0.75"-SD09-05C	2.00	0.75	1.75	0.055	0.297	5
	-2.50"-A0.75"-SD09-07C	2.50	0.75	1.75	0.055	0.297	7
	-2.50"-A1.00"-SD09-07C	2.50	1.00	2.00	0.055	0.297	7
	-2.50"-A0.75"-SD12-05C	2.50	0.75	1.75	0.071	0.380	5
	-2.00"-A0.75"-SD12-05C(L=2")	2.00	0.75	2.00	0.071	0.380	5
	-2.50"-A1.00"-SD12-05C	2.50	1.00	2.00	0.071	0.380	5
	-3.00"-A1.00"-SD12-06C	3.00	1.00	2.00	0.071	0.380	6
	-3.00"-A1.25"-SD12-06C	3.00	1.25	2.00	0.071	0.380	6
	-4.00"-B1.50"-SD12-08	4.00	1.50	2.50	0.071	0.380	8
	-3.00"-A1.00"-SD15-05C	3.00	1.00	2.00	0.087	0.508	5
	-3.00"-A1.25"-SD15-05C	3.00	1.25	2.00	0.087	0.508	5
	-4.00"-B1.50"-SD15-07	4.00	1.50	2.50	0.087	0.508	7
	-5.00"-B1.50"-SD15-09	5.00	1.50	2.50	0.087	0.508	9
	-6.00"-B2.00"-SD15-12	6.00	2.00	2.50	0.087	0.508	12

Spare parts

Tool type	Insert screw	Wedge screw	Clamp	Insert wrench	Wedge wrench	Sketch of installation
						
XMR01□□-SD06□□	I60M2.2×5.5	--	--	WT07IP	--	
XMR01□□-SD09□□	I60M3.5×08TT	I60M4×8.4	WD-204	WT10IP	WT15IP	
XMR01□□-SD12□□	I60M4×8.4	I60M4×8.4	WD-204	WT15IP	WT15IP	
XMR01□□-SD15□□	I60M5×13	I60M5×13	WD-208	WT20IP	WT20IP	

Selection of inserts



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

[illegible][illegible]

● Recommended grade ○ Produce according to order

Chipbreaker introduction:

-PM chipbreaker is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel.

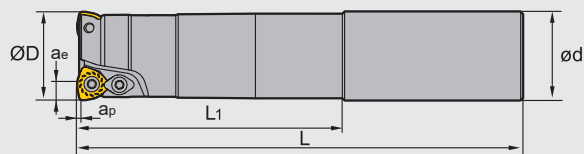
-DM chipbreaker is relatively suitable for machining of hard materials such as hardened steel, cast iron, etc.

- NM The reinforcement on the cutting edges of the NM chipbreaker has high wear resistance which is more suitable for milling of hard-to-cut materials.

High feed milling cutters


XMR01


W-type insert, straight shank



Specification of tools

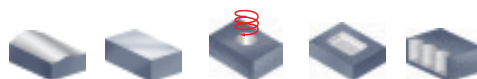
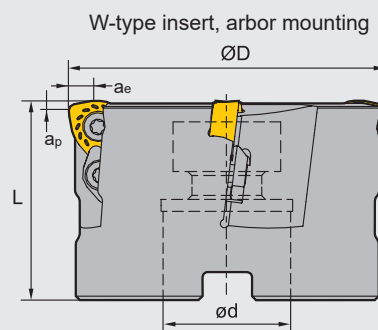
Type		Dimensions(inch)						
		ØD	ap	ae	L ₁	L	ød	Z (Number of teeth)
XMR01	-0.75" -G0.75" -WP05-02-M	0.75	0.059	0.150	1.75	5.00	0.75	2
	-0.75" -G0.75" -WP05-02-L	0.75	0.059	0.150	3.75	7.00	0.75	2
	-0.75" -G0.75" -WP05-02-XL	0.75	0.059	0.150	4.75	10.00	0.75	2
	-1.00" -G1.00" -WP06-02-M	1.00	0.059	0.171	2.25	5.50	1.00	2
	-1.00" -G1.00" -WP06-02-L	1.00	0.059	0.171	4.75	8.00	1.00	2
	-1.00" -G1.00" -WP06-02-XL	1.00	0.059	0.171	4.75	12.00	1.00	2
	-1.25" -G1.25" -WP06-02-M	1.25	0.059	0.171	2.75	6.00	1.25	2
	-1.25" -G1.25" -WP06-02-L	1.25	0.059	0.171	4.75	8.00	1.25	2
	-1.25" -G1.25" -WP06-02-XL	1.25	0.059	0.171	7.25	12.00	1.25	2
	-1.50" -G1.25" -WP06-03-M	1.50	0.059	0.171	2.00	6.00	1.25	3
	-1.50" -G1.50" -WP06-03-L	1.50	0.059	0.171	2.00	10.00	1.50	3
	-1.50" -G1.25" -WP06-03-XL	1.50	0.059	0.171	2.00	12.00	1.25	3
	-1.50" -G1.25" -WP08-02-M	1.50	0.059	0.223	2.00	6.00	1.25	2
	-1.50" -G1.25" -WP08-02-L	1.50	0.059	0.223	2.00	10.00	1.25	2
	-1.50" -G1.25" -WP08-02-XL	1.50	0.059	0.223	2.00	12.00	1.25	2
	-2.00" -G1.50" -WP09-02-M	2.00	0.118	0.268	2.15	6.00	1.50	2
	-2.00" -G1.50" -WP09-02-L	2.00	0.118	0.268	2.15	10.00	1.50	2

Spare parts

Adaptable tool holders	Insert screw	Clamp	Wrench	Sketch of installation	
					
XMR01□□-WP05□□	I60M3.5×6.5	—	WT10IP		
XMR01□□-WP06□□	I60M4×8.4		WT15IP		
XMR01□□-WP08□□	I60M5×13	WD-208	WT20IT		
XMR01□□-WP09□□					



High feed milling cutters


XMR01


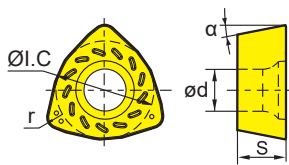
Specification of tools

Type		Dimensions(inch)					
		ØD	ap	ae	L	ød	Z (Number of teeth)
XMR01	-2.00"-A0.75"-WP06-05	2.00	0.059	0.171	2.000	0.750	5
	-2.00"-A0.75"-WP08-04	2.00	0.059	0.223	2.000	0.750	4
	-2.00"-A0.75"-WP06-04	2.00	0.059	0.171	2.000	0.750	4
	-2.50"-A0.75"-WP08-04	2.50	0.059	0.223	2.000	0.750	4
	-2.50"-A1.00"-WP08-04	2.50	0.059	0.223	2.000	1.000	4
	-2.50"-A0.75"-WP09-03	2.50	0.118	0.268	2.000	0.750	3
	-3.00"-A1.25"-WP08-04	3.00	0.059	0.223	2.500	1.250	4
	-3.00"-A1.25"-WP09-04	3.00	0.118	0.268	2.500	1.250	4
	-4.00"-B1.25"-WP08-05	4.00	0.059	0.223	2.500	1.250	5
	-4.00"-B1.25"-WP09-05	4.00	0.118	0.268	2.500	1.250	5

Spare parts

Tool type	Insert screw	Clamp	Wrench	Sketch of installation
XMR01 □□-WP06□□	I60M4×8.4	--	WT15IS	
XMR01 □□-WP08□□	I60M5×13	WD-208	WT20IT	
XMR01 □□-WP09□□	I60M5×13	WD-208	WT20IT	

Selection of inserts



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Ferrite materials	S Heat-resistant steel
P Steel	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊
K Cast iron	😊	😊	😊	😊	😊
N Ferrite materials	😊	😊	😊	😊	😊
S Heat-resistant steel	😊	😊	😊	😊	😊

Insert shape	Type	Dimensions(inch)					Coated grade										Cermet	Cemented carbide					
		α	r	ød	S	ØI.C	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320			YBG302	YBS203	YBS303	YNG151	YNG151C
	WPGT050315ZSR	11°	0.059	0.157	0.138	0.313	●																
	WPGT060415ZSR	11°	0.059	0.173	0.165	0.375	●																
	WPGT080615ZSR	11°	0.059	0.217	0.250	0.506	●							●									
	WPGT090725ZSR	11°	0.098	0.217	0.276	0.591	●																
	WPGT050315ZSR-PM	11°	0.059	0.157	0.138	0.313	●						●	●									
	WPGT060415ZSR-PM	11°	0.059	0.173	0.165	0.375	●						●	●									
	WPGT080615ZSR-PM	11°	0.059	0.217	0.250	0.506	●						●	●									
	WPGT090725ZSR-PM	11°	0.098	0.217	0.276	0.591	●						●										

● Recommended grade ○ Produce according to order

Chipbreaker introduction:

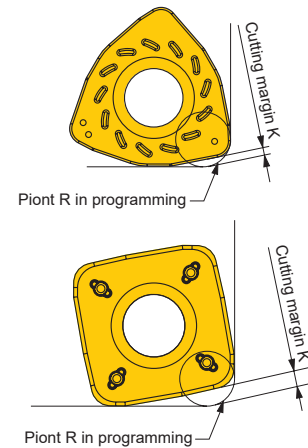
-PM chipbreaker has sharp cutting edge. It is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy. etc.

General chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron. etc.



Approximate R in machining program

Applicable insert	Approximate R(in)	Cutting margin K(in)
WPGT050315ZSR/-PM	0.079	0.020
WPGT060415ZSR/-PM	0.098	0.028
WPGT080615ZSR/-PM	0.098	0.028
WPGT090725ZSR/-PM	0.177	0.047
SDMT06T208-DM/-PM/NM	0.063	0.020
SDMT09T312-DM/-PM/NM	0.098	0.034
SDMT120412-DM/-PM/NM	0.157	0.037
SDMT150520-DM/-PM	0.157	0.054

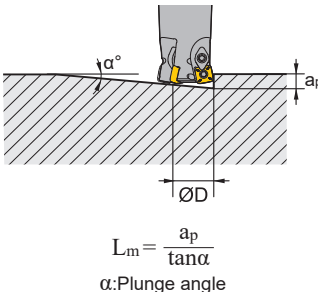
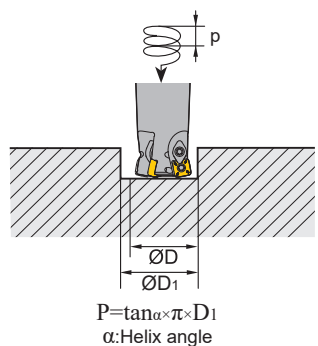


Ramp milling, helical interpolation milling

● Ramp milling $L_m = \frac{a_p}{\tan \alpha}$ α: Plunge angle	Insert	Diameter $\varnothing D$ (in)	Max.cutting depth a_p (in)	Max.cutting depth α°	Min.diameter $\varnothing D_1$ (in)	Max.diameter (in)
	WP**05**	0.75"	0.059	12.0	0.945	1.457
● Helical interpolation milling $P = \tan \alpha \times \pi \times D_1$ α: Helix angle	WP**06*	1.00"	0.059	8.8	1.220	1.850
		1.25"	0.059	5.0	1.772	2.402
		1.50"	0.059	3.2	2.402	3.031
		2.00"	0.059	2.8	3.189	3.819
	WP**08*	1.50"	0.059	9.0	2.047	3.031
		2.00"	0.059	5.4	2.795	3.819
		2.50"	0.059	4.3	3.819	4.843
		3.00"	0.059	2.9	5.157	6.181
	WP**09*	4.00"	0.059	2.1	6.732	7.756
		2.00"	0.118	7.2	2.756	3.780
		2.50"	0.118	4.5	3.780	4.803
		3.00"	0.118	2.8	5.118	6.142
		4.00"	0.118	2.2	6.693	7.717

Reduce the feed rate when plunging and circular milling.
For drilling operations (axial) set the feed rate under 0.008inch.
"Attention"—drilling can form long chips.

Ramp milling, helical interpolation milling

● Ramp milling  $L_m = \frac{a_p}{\tan \alpha}$ α: Plunge angle ● Helical interpolation milling  $P = \tan \alpha \times \pi \times D_1$ α: Helix angle	Insert	Diameter ØD(in)	Max.cutting depth ap(in)	Max.cutting depth α°	Min.diameter ØD1(in)	Max.diameter (in)
	SD**06**	0.75"	0.032	3.600	1.181	1.496
		1.00"	0.032	2.800	1.575	1.890
		1.25"	0.032	1.600	2.047	2.362
		1.50"	0.032	1.100	2.756	3.071
		2.00"	0.032	0.800	3.543	3.858
		2.50"	0.032	0.700	4.488	4.803
	SD**09**	1.00"	0.055	6.500	1.339	1.890
		1.25"	0.055	4.500	1.890	2.441
		2.00"	0.055	1.800	3.307	3.858
		2.50"	0.055	1.300	4.331	4.882
	SD**12**	1.25"	0.071	10.400	1.732	2.362
		1.50"	0.071	5.700	2.362	2.992
		1.75"	0.071	3.500	3.149	3.780
		2.50"	0.071	2.500	4.173	4.803
		3.00"	0.071	1.600	5.512	6.142
		4.00"	0.071	1.200	7.087	7.717
	SD**15**	1.50"	0.087	7.300	2.126	2.992
		3.00"	0.087	1.400	5.276	6.142
		4.00"	0.087	1.000	6.850	7.717
		5.00"	0.087	0.900	9.213	9.685
		6.00"	0.087	0.600	11.970	12.441

Reduce the feed rate when plunging and circular milling.
 For drilling operations (axial) set the feed rate under 0.008inch.
 "Attention"—drilling can form long chips.

Recommended cutting parameters

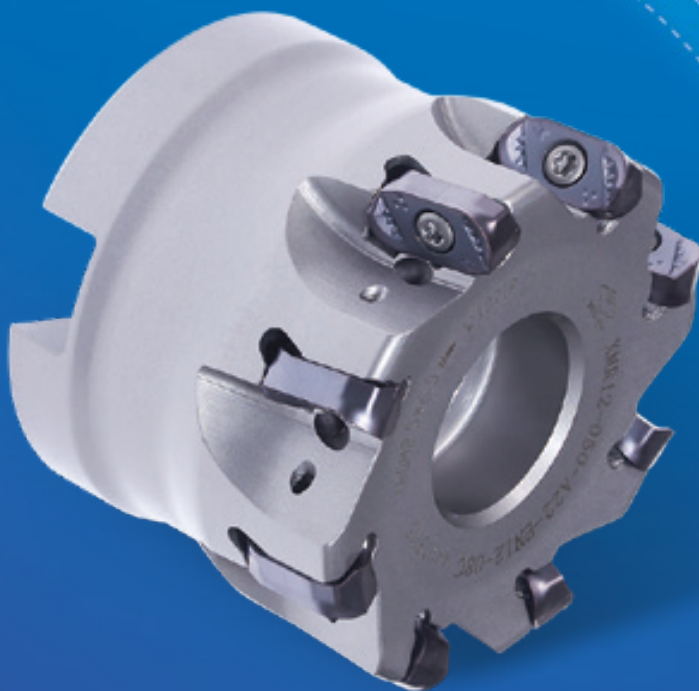
Workpiece material		Hardness HB	Insert grade	Cutting speed (SFPM)	Ø0.75/Ø1.00		Ø1.25	
					Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth
P	Soft steel Carbon Steel	≤HB180 HB180-280	YBC302 YBM253 YBG205 YBG205H YB9320	500 (300-650)	0.024~0.04	0.032~0.048	0.032~0.048	0.04~0.056
	Alloy steel Alloy tool steel	HB280-350 ≤HB350	YBC302 YBM253 YBG205 YBG205H YB9320	400 (260-600)	0.016~0.032	0.032~0.048	0.024~0.04	0.04~0.056
	pre-hardened steel	≤HRC35	YBC302 YBM253 YBG205 YBG205H YB9320	400 (260-500)	0.016~0.032	0.024~0.04	0.024~0.04	0.032~0.048
M	Stainless steel	≤HB270	YBM253	400 (260-500)	0.024~0.04	0.024~0.04	0.032~0.048	0.032~0.048
			YBG205 YB9320	400 (260-600)				
K	Common cast Iron	Tensile strength ≤350MPa	YBG302	500 (350-700) 500 (300-650)	0.024~0.04	0.04~0.056	0.032~0.048	0.048~0.064
	Nodular cast iron	Tensile strength ≤800MPa	YBG302	400 (300-600) 400 (260-500)	0.016~0.032	0.032~0.048	0.024~0.04	0.04~0.056
S	High-temperature alloy	≤400	YBG205H YBS203	250 (200-400)	0.024~0.04	0.024~0.04	0.031~0.047	0.031~0.047
			YBS303	200 (250-350)	0.016~0.031	0.016~0.031	0.016~0.04	0.016~0.04

Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	Cutting speed (SFPM)	Ø1.50		Ø2.00/Ø2.50		Ø3.00/Ø4.00/Ø5.00/Ø6.00	
					Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth	Axial cutting depth	Feed rate per tooth
P	Soft steel Carbon steel	≤HB180 HB180-280	YBC302 YBM253 YBG205 YBG205H YB9320	500 (300-650)	0.032~0.048	0.04~0.056	0.043~0.06	0.043~0.06	0.04~0.06	0.04~0.06
	Alloy steel Alloy tool steel	HB280-350 ≤HB350	YBC302 YBM253 YBG205 YBG205H YB9320	400 (260-600)	0.024~0.04	0.04~0.056	0.035~0.051	0.43~0.06	0.032~0.051	0.04~0.06
	Pre-hardened steel	≤HRC35	YBC302 YBM253 YBG205 YBG205H YB9320	400 (260-500)	0.024~0.04	0.032~0.048	0.035~0.051	0.035~0.051	0.032~0.051	0.032~0.051
M	Stainless steel	≤HB270	YBM253	400 (260-500)	0.032~0.048	0.032~0.048	0.043~0.06	0.035~0.051	0.04~0.06	0.032~0.051
			YBG205 YBG205H YB9320	400 (260-600)						
K	Common cast iron	Tension Strength ≤350MPa	YBG302	500 (350-700) 500 (300-650)	0.032~0.048	0.048~0.064	0.043~0.06	0.051~0.067	0.04~0.06	0.048~0.067
	Nodular cast iron	Tension Strength ≤800MPa	YBG302	400 (300-600) 400 (260-500)	0.024~0.040	0.04~0.056	0.035~0.051	0.043~0.06	0.032~0.051	0.04~0.06
S	High-temperature alloy	≤400	YBG205H YBS203	250 (200-400)	0.031~0.047	0.024~0.04	0.043~0.059	0.024~0.047	0.04~0.059	0.016~0.047
			YBS303	200 (250-350)	0.016~0.04	0.016~0.04	0.024~0.047	0.024~0.04	0.016~0.04	0.016~0.031

XMR12 Series

High-feed, square shoulder and copy milling cutter

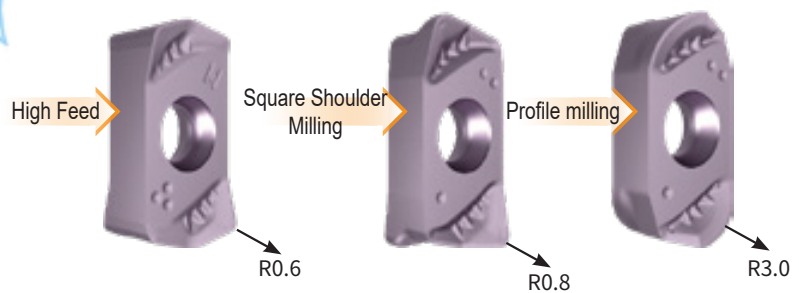


Multi-tooth cutter specifications deliver higher productivity

Open cutting edge design for smooth chip evacuation

Sharp side positioning angle ensures stable insert clamping

Compatible with various inserts to achieve high-feed, square shoulder and copy machining functions

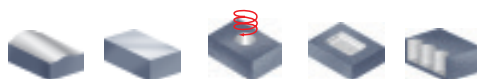
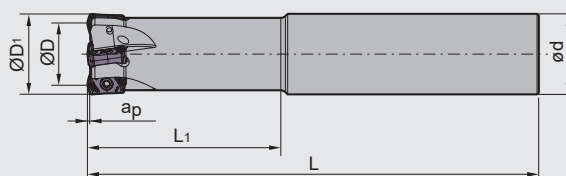


Double-sided 4 cutting tips for superior cost efficiency

Compact insert size suitable for small-diameter multi-tooth cutters



High feed milling cutters


XMR12


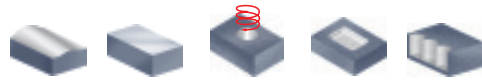
Specification of tools

Type		Dimensions(inch)						
		ØD1	ØD	ap	L	L1	ød	Z (Number of teeth)
XMR12	-0.630"-G0.625"-EN12-02C	0.630	0.409	0.039	4.00	1.25	0.625	2
	-0.669"-G0.625"-EN12-02C	0.669	0.449	0.039	4.00	1.25	0.625	2
	-0.709"-G0.625"-EN12-02C	0.709	0.488	0.039	4.00	1.25	0.625	2
	-0.787"-G0.75"-EN12-03C	0.787	0.567	0.039	5.25	2.00	0.75	3
	-0.866"-G0.75"-EN12-03C	0.866	0.646	0.039	5.25	2.00	0.75	3
	-0.984"-G1.00"-EN12-04C	0.984	0.764	0.039	5.50	2.50	1.00	4
	-1.102"-G1.00"-EN12-04C	1.102	0.882	0.039	5.50	2.50	1.00	4
	-1.181"-G1.25"-EN12-04C	1.181	0.961	0.039	6.00	2.75	1.25	4
	-1.260"-G1.25"-EN12-05C	1.260	1.039	0.039	6.00	2.75	1.25	5
	-1.299"-G1.25"-EN12-05C	1.299	1.079	0.039	6.00	2.75	1.25	5
	-1.378"-G1.25"-EN12-05C	1.378	1.157	0.039	6.00	3.25	1.25	5

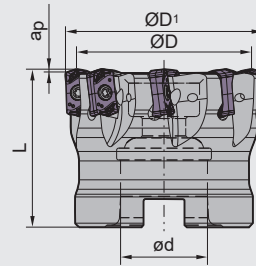
Spare parts

Insert	Insert screw	Отвертка			Sketch of installation
					
ENMX12□□-GM	I60M2.5×6.5	WT07IP	--	--	

High feed milling cutters



XMR12 P M



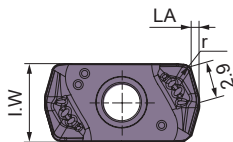
Specification of tools

Type		Dimensions(inch)					
		ØD ₁	ØD	ap	L	ød	Z (Number of teeth)
XMR12	-1.50"-A0.625"-EN12-06C	1.50	1.279	0.039	1.50	0.625	6
	-2.00"-A0.75"-EN12-08C	2.00	1.779	0.039	1.50	0.75	8
	-2.50"-A0.75"-EN12-10C	2.50	2.279	0.039	1.50	0.75	10

Note: The dimensions in the above table are based on ENMX1206XR-GM inserts. The values of L₁, L and ØD₁ for ENMX120608-GM or ENMX1206R30-GM inserts are shown in the table below:

ENMX1206XR-GM	ENMX120608-GM	ENMX1206R30-GM
L ₁ /L	L ₁ /L+0.11	L ₁ /L+0.11
ØD ₁	ØD ₁ -0.4	ØD ₁ -0.4

Selection of inserts



😊 Good working conditions 😐 General working conditions ☹️ Adverse working conditions

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Ferrite materials	S Heat-resistant steel
P Steel	😊😊	😊😊	😊😊	😊😊	😊😊
M Stainless steel	😊😊	😊😊	😊😊	😊😊	😊😊
K Cast iron	😊😊	😊😊	😊😊	😊😊	😊😊
N Ferrite materials	😊😊	😊😊	😊😊	😊😊	😊😊
S Heat-resistant steel	😊😊	😊😊	😊😊	😊😊	😊😊

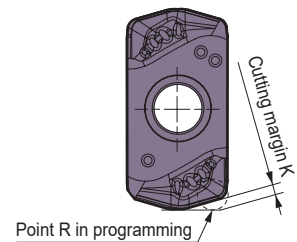
Insert shape	Type	Dimensions(inch)			Coated grade										Cermet		Cemented carbide					
		I.W	r	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201	
	ENMX1206XR-GM	0.236	0.024	0.039					○			○	○	○								
	ENMX120608-GM	0.236	0.035	0.118					○			○	○	○								
	ENMX1206R20-GM	0.236	0.079	0.071					○			○	○	○								
	ENMX1206R30-GM	0.236	0.118	0.110					○			○	○	○								

● Recommended grade ○ Produce according to order



Approximate R in machining program

Applicable insert	Approximate R(inch)	Cutting margin K(inch)	Overcut(inch)
	0.039	0.0189	-
ENMX1206XR-GM	0.059	0.0140	0.0018
	0.079	0.0092	0.0085



Ramp Milling & Helical Interpolation Milling

Recommended Cutting Parameters (D: Tool Diameter)

Tool diameter ØD(inch)	Maximum Ramp Milling Angle θ(°)	Minimum Machinable Hole Diameter ØDmin(2*D-10) (inch)	Maximum Machinable Hole Diameter ØDmax(2*D-1) (inch)
0.630	3.5	0.850	1.197
0.669	2.99	0.929	1.276
0.709	2.7	1.008	1.354
0.787	2.3	1.165	1.512
0.866	2	1.323	1.669
0.984	1.6	1.559	1.906
1.102	1.4	1.795	2.142
1.181	1.3	1.953	2.299
1.260	1.2	2.110	2.457
1.299	0.98	2.268	2.614
1.575	0.9	2.740	3.087
1.969	0.7	3.512	3.874
2.480	0.5	4.551	4.898

Note: Reference stock allowance for closed pocket corner cleaning, approximate radius stock allowance for NC machining program.

Case for XMR12

Workpiece Name: Abrasive Mold Convex Surface
 Workpiece Material: 42CrMo
 Machining Method: Copy Rough Milling
 Cooling Method: Internal Coolant
 Cutter Model: XMR12-2.00"-A0.75"-EN12-08C
 Insert Model: PG1020/ENMX1206R30-GM
 Cutting Parameters: 656 SFPM,
 fz=0.0165 IFT,
 ap=0.0276 inch,
 ae=1.378 inch



Conclusion: High material removal rate, no insert deflection during machining, more stable clamping compared with round inserts.

1.Large feed

Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters			
				Cutting speed(SFPM)	f(IPT)		
					Ø0.630~1.181	Ø1.181~2.480	Plunge milling
P	Low-carbon steel, Soft steel	≤HB180	YBG205H	656(328~984)	0.020~0.047	0.020~0.059	0.0039
	Alloy steel, alloy tool steel	HB180-280	YBG205H	492(328~656)	0.020~0.047	0.020~0.059	0.0039
	Pre-hardened steel	≤HRC35	YBG205H	492(328~656)	0.020~0.028	0.020~0.039	0.0039
M	Stainless steel	≤HB200	YBG205H	410(328~492)	0.020	0.020~0.028	0.0031
K	Cast iron	HB150-250	YBG205H	459(262~656)	0.020~0.047	0.020~0.059	0.0039

2.Square shoulder milling

Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	≤HB180	YBG205H	853 (525 - 984)	0.0039~0.0138
	Alloy steel, Alloy tool steel	HB180-280	YBG205H	787 (525 - 787)	0.0039~0.0138
	Pre-hardened steel	≤HRC35	YBG205H	656 (394 - 787)	0.0039~0.0138
M	Stainless steel	≤HB200	YBG205H	590 (328 - 755)	0.0039~0.0118
K	Cast iron	HB150-250	YBG205H	722 (459 - 820)	0.0039~0.0118

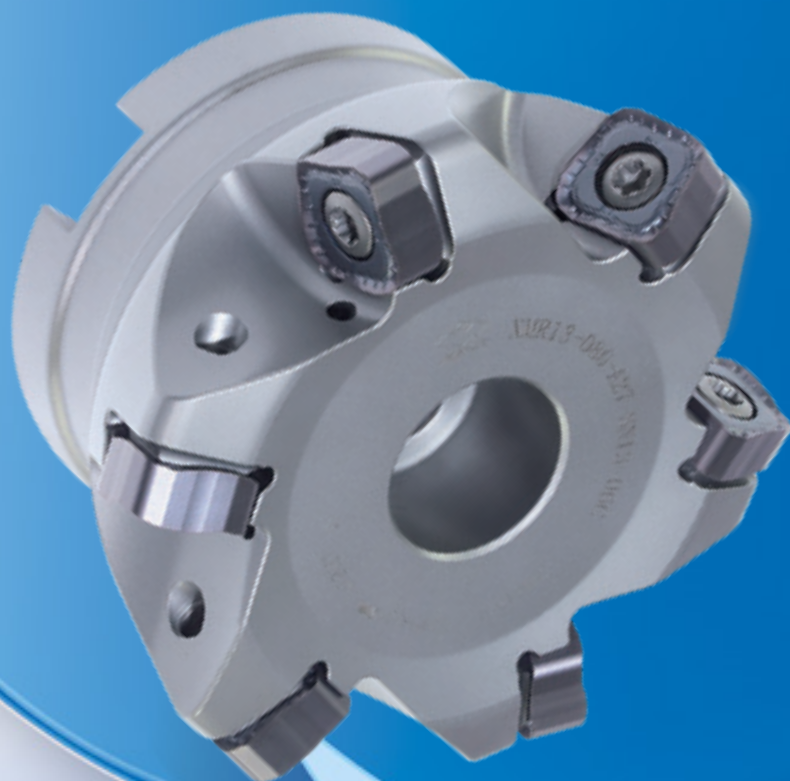
3.Profile milling

Recommended cutting parameters

	Workpiece material	Hardness HB	Insert grade	Cutting parameters	
				V(SFPM)	f(IPT)
P	Low-carbon steel, Soft steel	≤HB180	YBG205H	492~820	0.0079~0.0236
	Alloy steel, alloy tool steel	HB180-280	YBG205H	492~820	0.0079~0.0236
	Pre-hardened steel	≤HRC35	YBG205H	328~656	0.0059~0.0157
M	Stainless steel	≤HB200	YBG205H	328~656	0.0079~0.0236
K	Cast iron	HB150-250	YBG205H	492~820	0.0079~0.0236

XMR13 Series

Double-sided S-type general high-feed milling cutter



Double-sided 8 cutting edges for outstanding cost efficiency

3D convex low-resistance curved cutting edge ensures stable machining with slight impact and excellent vibration resistance

Iteratively optimized groove geometry via full simulation with superior chip control performance

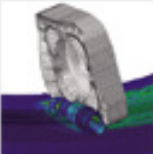
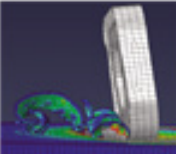
Built-in wiper edge for stable residual height control

4 × 2 = 8 edges

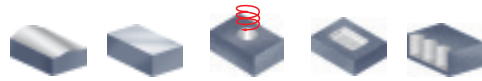


8 usable cutting edges on both sides, cutting force no higher than single-sided inserts

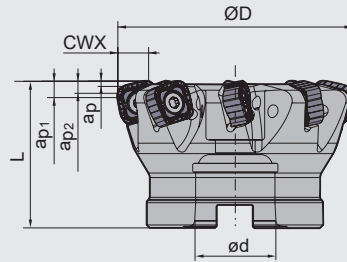
Excellent chip control and well curled chip shape

	Chip shape	Simulation	XMR13		Chip shape	Simulation	XMR13
Small depth of cut				Large depth of cut			

High feed milling cutters



XMR13 P M K S



Specification of tools

Type		Dimensions(inch)							
		ØD	ød	L	ap	ap1	ap2	CWX	Z (Number of teeth)
XMR13	-2.00"-A0.75"-SN13-04C	2.00	0.75	1.50	0.0748	0.2165	0.1772	0.3937	4
	-2.50"-A0.75"-SN13-05C	2.50	0.75	1.50	0.0748	0.2165	0.1772	0.3937	5
	-2.50"-A0.75"-SN13-07C	2.50	0.75	1.50	0.0748	0.2165	0.1772	0.3937	7
	-3.00"-A1.00"-SN13-06C	3.00	1.00	2.00	0.0748	0.2165	0.1772	0.3937	6
	-3.00"-A1.00"-SN13-08C	3.00	1.00	2.00	0.0748	0.2165	0.1772	0.3937	8
	-4.00"-B1.25"-SN13-07C	4.00	1.25	2.00	0.0748	0.2165	0.1772	0.3937	7
	-4.00"-B1.25"-SN13-10C	4.00	1.25	2.00	0.0748	0.2165	0.1772	0.3937	10
	-5.00"-B1.25"-SN13-08C	5.00	1.25	2.50	0.0748	0.2165	0.1772	0.3937	8
	-6.00"-C1.50"-SN13-09	6.00	1.50	2.50	0.0748	0.2165	0.1772	0.3937	9

Note:

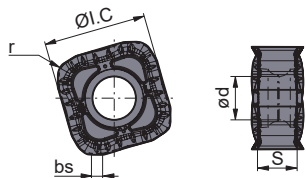
AP stands for maximum depth of cut under high feed rate. Reduce feed rate moderately if depth exceeds AP.
For scale removal machining, set depth of cut between APMX2 and APMX, and lower feed rate accordingly.

Spare parts

Insert	Insert screw	Wrench				Sketch of installation
						
SNMU13□□-GM/GL	I60M5×13	WT20IP	WT20IS	WT20IT		



Selection of inserts



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	Steel working conditions				General working conditions				Adverse working conditions			
	1	2	3	4	1	2	3	4	1	2	3	4
P Steel	😊😊				😊😊😊😊😊😊😊😊							
M Stainless steel	😊😊				😊😊😊😊😊😊😊😊					😊😊😊😊		
K Cast iron			😞😞😞😞									😞
N Ferrite materials												😊😊
S Heat-resistant steel					😊😊😊😊😊😊😊😊					😊😊		

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● Recommended grade ○ Produce according to order

Ramp Milling & Helical Interpolation Milling

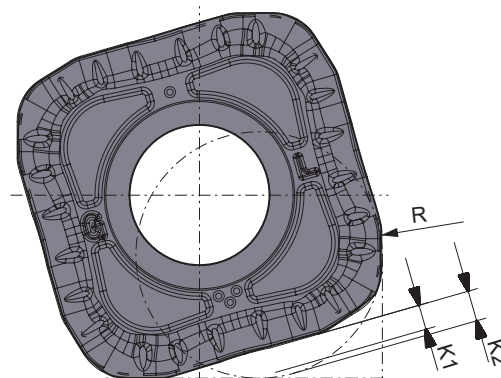
Recommended Cutting Parameters (D: Tool Diameter)

Tool diameter ØD(inch)	Maximum Ramp Milling Angle θ(°)	Minimum Machinable Hole Diameter ØDmin(2*D-10) (inch)	Maximum Machinable Hole Diameter ØDmax(2*D-1) (inch)
2.00	0.348	3.1496	3.8976
2.50	0.345	4.1732	4.9213
3.00	0.331	5.5118	6.2598
4.00	0.338	7.0866	7.8346
5.00	0.431	9.0551	9.8031
6.00	0.398	11.8110	12.5591

Note: Reference stock allowance for closed pocket corner cleaning, approximate radius stock allowance for NC machining program.

Program Approximate R Value

Applicable insert	Approximate R(inch)	Cutting margin K(inch)	Overcut(inch)
SNMU130520	0.158	0.0572	-
	0.197	0.0479	0.0023
	0.236	0.0386	0.0120



Recommended cutting parameters

Workpiece material		Hardness HB	Insert grade	V(SFPM)	Ø2.00”		Ø2.50”/Ø3.00”		Ø4.00”/Ø5.00”/ Ø6.25”	
					Ap	f(IPT)	Ap	f(IPT)	Ap	f(IPT)
P	Soft steel Carbon Steel	≤HB180 HB180-280	YBG205H YBM253 YBC302	558(394~722)	0.0236 ~0.0591	0.0315 ~0.0591	0.0315 ~0.0591	0.0315 ~0.0591	0.0236 ~0.0591	0.0197 ~0.0591
	Alloy steel Alloy tool steel	HB280-350	YBG205H YBM253 YBC302	427(262~591)	0.0157 ~0.0472	0.0236 ~0.0591	0.0236 ~0.0591	0.0236 ~0.0591	0.0157 ~0.0512	0.0197 ~0.0591
	pre-hardened steel	≤HRC35	YBG205H	394(262~525)	0.0157 ~0.0394	0.0197 ~0.0394	0.0197 ~0.0394	0.0197 ~0.0394	0.0157 ~0.0512	0.0059 ~0.0157
M	Stainless steel	≤HB270	YBG205H	394(262~525)	0.0315 ~0.0472	0.0315 ~0.0472	0.0354 ~0.0512	0.0354 ~0.0512	0.0394 ~0.0591	0.0315 ~0.0512
K	Common cast iron	Tension Strength ≤350MPa	YBG205H	492(328~656)	0.0236 ~0.0591	0.0315 ~0.0630	0.0315 ~0.0669	0.0315 ~0.0669	0.0236 ~0.0591	0.0236 ~0.0669
	Nodular cast iron	Tension Strength ≤800MPa	YBG205H	394(262~525)	0.0157 ~0.0472	0.0236 ~0.0551	0.0236 ~0.0591	0.0236 ~0.0591	0.0157 ~0.0512	0.0197 ~0.0591
S	High- temperature alloy	≤400	YBS303	197(148~361)	0.0157 ~0.0394	0.0157 ~0.0394	0.0236 ~0.0394	0.0197 ~0.0394	0.0157 ~0.0394	0.0157 ~0.0315